

Conference Abstract

Bringing Bugs into the System

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Abstract

While agriculture, a human-defined and delimited version of the natural world, is not generally touted for its biodiversity, the success or failure of an agroecosystem may hinge on how its biodiversity is managed. Researchers who study this world into which the greater biodiversity of the surrounding area ebbs and flows, attempt to control parts of the system such as the crop (e.g., cultivar, season-to-season rotation with other crops, susceptibility to pests and diseases, potential yield) and its management practices (e.g., planting date, plant density, tillage, pesticide and soil amendment regimes), but have little to no control over abiotic factors (e.g., weather, soils). These researchers will study specific components of agricultural systems with the goal of minimizing pests or diseases, increasing pollination services and yield, maximizing biological control opportunities, and optimizing cultural practices, including the choice or development of the crop cultivar itself. The data collected may be at various time (e.g., second-to-second meteorological measurements, daily or weekly trap catches, season-end yield assessments) and spatial (e.g. intra-plant to area-wide management) scales. The complex detail and rigorous methods are usually captured only in free text summary in scientific papers. Here, raw data are statistically analyzed but not published, significant differences in treatments highlighted, and conclusions drawn about the success or failure of various experimental regimes. Given the enormity of the research process, which often spans years to encompass multiple cropping seasons and investments in human expertise and numbers, it is little wonder that agricultural researchers often ignore the fact that their work could and should become a part of the greater biodiversity assessment of our planet.

That an increasing number of journals require or request that authors provide access to raw data of their published studies is a positive step. However, journals and data repositories give little guidance for standardizing the data for discovery and reuse, and the issues of experimental design metadata, use of voucher specimens to anchor taxonomic observations, and measurements of facts at different time and spatial scales, further complicate the issue. I will explore these issues in the context of agricultural entomology research.

Keywords

entomology, agriculture, experimental design, standards

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